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EXAMINER	
LOVEL, KIMBERLY M	
ART UNIT	**PAPER NUMBER**
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/802,615	CHO ET AL.	
	Examiner	Art Unit	
	KIMBERLY LOVEL	2167	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *17 July 2008*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *4,6-26 and 35-47* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *4,6-26 and 35-47* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *4/7/08 & 11/7/08*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Response to Amendment

1. This communication is in response to the Amendment filed 17 July 2008.

2. Claims 4, 6-26 and 35-47 are currently pending. In the Amendment filed 17 July 2008, Claims 4, 12, 16, 20 and 21 are amended, Claims 1-3, 5, 27-34 are canceled and Claims 37-47 are new. This action is made Final.

Information Disclosure Statement

3. The information disclosure statements (IDS) submitted on 7 November 2008 and 7 April 2008 were filed after the mailing date of the Office Action on 22 January 2008. The submission is in compliance with the provisions of 37 CFR 1.97. Accordingly, the information disclosure statements are being considered by the examiner.

Specification

4. The objection to the specification is withdrawn as necessitated by applicant's amendment to claim 12.

Claim Rejections - 35 USC § 101

5. The rejections of claims 12-26 and 35-36 under 35 USC § 101 are withdrawn as necessitated by applicant's amendment.

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

7. Claims 4, 6-16, 18, 20-26 and 35-46 are rejected under 35 U.S.C. 103(a) as being unpatentable over US Patent Publication Number 2002/0165737 issued to Howard E. Mahran ("Mahran") and US Patent Number 7,022,905 issued to Jeremy D. F. Hinman et al ("Hinman").

Referring to claim 4, Mahran teaches a method for constructing a knowledge representation, the method comprising the steps of:

selecting articles to serve as an information source for the knowledge representation (paragraph 21, as extracting information from medical literature to build a medical database);

extracting and formatting information contained in the articles for storage in the knowledge representation (paragraph 17, as extracting information from medical literature) including representing a fact expressed in an article's natural language as at least an object and process relationship, (paragraph 123, object equates to field: id, process equates to the field: treatment id , paragraph 111-112:lines 11-16, as abstract

may be extracted directly from document or prepared and requires a skilled technician or scientist); and

storing the formatted information in the knowledge representation (paragraph 21, as storing in a medical database).

Mahran does not explicitly teach verifying that the information extracted from the selected articles is correct and that it has been placed in the correct format for storage in the knowledge representation, wherein the verification is performed by quality control personnel. Hinman teaches verifying that the information extracted from the selected articles is correct and that it has been placed in the correct format for storage in the knowledge representation, wherein the verification is performed by quality control personnel (column 12, lines 1-7, as communication to a second categorizer to review classification and paragraph 10, lines 35-40 as quality control personnel) to improve uniformity and consistency of classification values.

It would have been obvious to a person of ordinary skill in the art at the time the invention was made to modify Mahran with verifying that the information extracted from the selected articles by the knowledge extraction personnel is correct and that it has been placed in the correct format for storage in the knowledge representation, wherein the verification is performed by quality control personnel to improve uniformity and consistency of classification values as described by Hinman (column 12, lines 11-12). One would have been motivated to do so in order to improve uniformity and consistency of classification values.

Referring to claim 6, the combination of Mahran and Hinman (hereafter Mahran/Hinman) teaches the method of claim 4, wherein both the extracting step and verifying step are performed by the same person, which person has been qualified by a predetermined procedure to perform both steps simultaneously (Mahran: paragraph 115, lines 4-6, as personnel to extract and interpret and prepare calculations).

Referring to claim 7, Mahran/Hinman teaches the method of claim 4 wherein at least the steps of extracting and verifying occur in geographically separated locations (Mahran: paragraph 115, lines 4-6, and paragraph 22 as personnel to extract and interpret and prepare calculations and an expert).

Referring to claim 8, Mahran/Hinman teaches the method of claim 4 wherein the geographically separate locations are chosen based upon the cost of performing the respective steps of extracting and verifying,… (Mahran: paragraph 115, lines 4-6, and paragraph 22 as personnel to extract and interpret and prepare calculations and an expert).

Referring to claim 9, Mahran/Hinman teaches the method of claim 4 wherein the extracting information step includes using a computer-driven parser of natural language (Mahran: Figure 1A, element 206, parser).

Referring to claim 10, Mahran/Hinman teaches the method of claim 4 wherein the representing step includes representing an object and process relationship in the form of the process being an action that acts upon the object (Mahran: paragraph 123, object equates to field: id, process equates to the field: treatment id).

Referring to claim 11, Mahran/Hinman teaches the method of claim 4 wherein the representing step includes representing an object and process relationship in the form of the first object being an effector of the process and the process is an action that acts upon one or more second objects (Mahran: paragraph 123, object equates to field:id, process equates to the field: treatment id).

Referring to claim 12 Mahran teaches a system for extracting information from articles originating from a first database and storing the extracted information in a second database, the system comprising:

an information extractor that extracts a finding from an article's natural language and translates this finding into a structured finding comprising at least an object, process, and a relationship between the object and process, wherein the information extractor is an application program (paragraph 123, object equates to field:id, process equates to the field: treatment id);

a computer system in communication with the second database for storing the structured finding in the second database (paragraph 21, as storing in a medical database).

Mahran does not explicitly teach a content reviewer in communication with the information extractor for verifying whether the structured finding has been properly formatted for storage in the second database, wherein the content reviewer is an application program. Hinman teaches a content reviewer in communication with the information extractor for verifying whether the structured finding has been properly formatted for storage in the second database, wherein the content reviewer is an

application program (column 12, lines 1-7, as communication to a second categorizer to review classification and paragraph 10, lines 35-40 as quality control personnel) to improve uniformity and consistency of classification values.

It would have been obvious to a person of ordinary skill in the art at the time the invention was made to modify Mahran with a database management unit in communication with the information extraction unit for verifying whether the structured finding has been properly formatted for storage in the second database to improve uniformity and consistency of classification values as described by Hinman (column 12, lines 11-12). One would have been motivated to do so in order to improve uniformity and consistency of classification values.

Referring to claim 13, Mahran/Hinman teaches the system of claim 12, further comprising a query management and information display unit for responding to user inquiries for information stored in the second database and for retrieving information from the second database in response to those queries (Mahran: paragraph 140, a output dataset).

Referring to claim 14, Mahran/Hinman teaches the system of claim 12, wherein the second database is frame-based (Mahran: Figure 1A, element 22).

Referring to claim 15, Mahran/Hinman teaches the system of claim 12, wherein the structured finding is formatted according to a fact-based model (Mahran: paragraph 108-111, as extracting data from a study into a database from future retrieval).

Referring to claim 16, Mahran/Hinman teaches the system of claim 12, wherein the relationship between the object and process takes the form of the process is an

action that acts upon the object (Mahran: paragraph 123, object equates to field: id, process equates action equates to the field: treatment id).

Referring to claim 18, Mahran/Hinman teaches the system of claim 12, wherein the finding is derived from one or more sentences, a portion of sentence, a diagram, figure or table (Mahran: paragraph 21, as extract information from literature).

Referring to claim 20, Mahran/Hinman teaches the system of claim 12, wherein the first database is coupled to, and in communication with the information extractor (Mahran: Figure 1A).

Referring to claim 21, Mahran/Hinman teaches the system of claim 12, further including a server, for selecting articles for information extraction from among a plurality of articles residing in the first database (Mahran: paragraph 69, identifying useful papers and extracting information).

Referring to claim 22, Mahran/Hinman teaches the system of claim 12, wherein the article's representation of the finding has a first format and wherein the translation of the finding includes a translation of the finding into a natural language having a second format (Mahran: paragraph 23).

Referring to claim 23, Mahran/Hinman teaches the system of claim 12, wherein information is extracted using a user template (Mahran: paragraph 112, as populating fields by a skilled technician include a template).

Referring to claim 24, Mahran/Hinman teaches the system of claim 12, wherein information is extracted using a computer-driven parser of the natural language (Mahran: Figure 1A, element 206, parser).

Referring to claim 25, Mahran/Hinman teaches the system of claim 12, wherein the structured finding comprises a first object, second object and a process relationship (Mahran: paragraph 123, object equates to field: id, process equates to the field: treatment id).

Referring to claim 26, Mahran/Hinman teaches the system of claim 12, wherein the structure finding comprises an object, a process and a process relationship (Mahran: paragraph 123, object equates to field: id, process equates to the field: treatment id).

Referring to claim 35, Mahran/Hinman teaches the system of claim 12, wherein the object is an effector of a plurality of processes and all of these processes are actions that act upon a second object (Mahran: paragraph 123, objects is an effector equates to field:ids, process are actions equates to the field: treatment id).

Referring to claim 36, Mahran/Hinman teaches the system of claim 12, wherein the article's natural language includes a first and second finding and wherein the first finding comprises the process and object and the object includes the second finding (Mahran: paragraph 21, information extraction equates to the findings and paragraph 123, objects is an effector equates to field:ids, process are actions equates to the field: treatment id).

Referring to claim 37, Mahran teaches a system comprising:

a) a server configured to:

1) select an article from a database for extraction (paragraph 21, as extracting information from medical literature to build a medical database);

2) assign an article to an information extractor for extraction of information from an article to be structured into at least an object, process, and a relationship between the object and process (paragraph 17, as extracting information from medical literature and paragraph 123, object equates to field: id, process equates to the field: treatment id , paragraph 111-112:lines 11-16, as abstract may be extracted directly from document or prepared and requires a skilled technician or scientist);

3) receive information extracted by information extractor (see paragraph 17 and 123); and

b) an information store for storing the extracted information (paragraph 21, as storing in a medical database).

Mahran does not explicitly teach the further limitations of 4) assign the article and extracted information to a content reviewer and 5) receive corrections to extracted information from the content reviewer. Hinman teaches the further limitations of 4) assign the article and extracted information to a content reviewer and 5) receive corrections to extracted information from the content reviewer (column 12, lines 1-7, as communication to a second categorizer to review classification and paragraph 10, lines 35-40 as quality control personnel) to improve uniformity and consistency of classification values.

It would have been obvious to a person of ordinary skill in the art at the time the invention was made to modify Mahran with verifying that the information extracted from the selected articles by the knowledge extraction personnel is correct and that it has

been placed in the correct format for storage in the knowledge representation, wherein the verification is performed by quality control personnel to improve uniformity and consistency of classification values as described by Hinman (column 12, lines 11-12). One would have been motivated to do so in order to improve uniformity and consistency of classification values.

Referring to claim 38, Mahran/Hinman teaches the system of claim 37, further comprising the server configured to: 1) assign an article to an information model structure reviewer; 2) receive changes or updates to information model structure from the information model structure reviewer; and store changes or updates to information model structure in the information store (Hinman: column 12, lines 1-7 and paragraph 10, lines 35-40).

Referring to claim 39, Mahran/Hinman teaches the system of claim 37 wherein the information extraction process and content review process are performed at different geographical sites (Mahran: paragraph 115, lines 4-6, and paragraph 22 as personnel to extract and interpret and prepare calculations and an expert).

Referring to claim 40, Mahran/Hinman teaches the system of claim 37, wherein the server is further configured to receive information about quality control metrics (Hinman: column 12, lines 1-7 and paragraph 10, lines 35-40).

Referring to claim 41, Mahran/Hinman teaches the system of claim 40, wherein the server is further configured to store information about quality control metrics in the information store (Hinman: column 12, lines 1-7 and paragraph 10, lines 35-40).

Referring to claim 42, Mahran/Hinman teaches the system of claim 37, wherein the server is further configured to comprise a query management and information display unit for responding to user inquiries for information stored in the second database and for retrieving information from the second database in response to those queries (Mahran: paragraph 140, a output dataset).

Referring to claim 43, Mahran/Hinman teaches the system of claim 37, wherein the information store is frame-based (Mahran: Figure 1A, element 22).

Referring to claim 44, Mahran/Hinman teaches the system of claim 37, wherein the structured finding is formatted according to a fact-based model (Mahran: paragraph 108-111, as extracting data from a study into a database from future retrieval).

Referring to claim 45, Mahran/Hinman teaches the system of claim 37, wherein the relationship between the object and process takes the form of the process is an action that acts upon the object (Mahran: paragraph 123, object equates to field: id, process equates action equates to the field: treatment id).

Referring to claim 46, Mahran/Hinman teaches the system of claim 37, wherein the finding is derived from one or more sentences, a portion of sentence, a diagram, figure or table (Mahran: paragraph 21, as extract information from literature).

8. **Claims 17 is rejected under 35 U.S.C. 103(a) as being unpatentable over US Patent Publication Number 2002/0165737 issued to Howard E. Mahran ("Mahran") and US Patent Number 7,022,905 issued to Jeremy D. F. Hinman et al ("Hinman") as applied to claim 12 above and further in view of US Patent Number 6,470,277 issued to Daniel J. Chin et al ("Chin").**

As per claim 17, Mahran/Hinman fail to explicitly teach wherein the object is a gene, protein, cell, or organism. Chin does teach this limitation (Abstract, as gene) to facilitate identification of candidate genes.

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify Mahran and Hinman with wherein the object is a gene, protein, cell, or organism to facilitate identification of candidate genes. (column 3, lines 29-30). One would have been motivated to do so in order to facilitate identification of candidate genes.

9. Claims 19 and 47 are rejected under 35 U.S.C. 103(a) as being unpatentable over US Patent Publication Number 2002/0165737 issued to Howard E. Mahran ("Mahran") and US Patent Number 7,022,905 issued to Jeremy D. F. Hinman et al ("Hinman") as applied to claims 12 and 37 above and further in view of US Patent Number 6,498,795 issued to Junbiao Zhang et al ("Zhang").

As per claims 19 and 47, Mahran/Hinman fail to explicitly teach wherein the second database includes an ontology. Zhang teaches wherein the second database

includes an ontology (column 7, line 15-34, as ontology) to ensure agents interact with one another coherently and consistently since they commit to use a set of definitions and conceptualizations.

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify Mahran and Hinman with wherein the second database includes an ontology to ensure agents interact with one another coherently and consistently since they commit to use a set of definitions and conceptualizations (column 7, lines 15-24). One would have been motivated to do so to ensure agents interact with one another coherently and consistently since they commit to use a set of definitions and conceptualizations.

Response to Arguments

10. Applicant's arguments filed 17 July 2008 have been fully considered but they are not persuasive.

11. On page 10 of the Remarks, the Applicant argues "Applicants respectfully contend that Mahran does not disclose the representation of a fact expressed in an article's natural language as at least an object and process relationship." The examiner respectfully disagrees. Mahran discloses the extraction of facts from medical documents. These facts are then stored in a table which relates the object and process.

12. On pages 10-12 of the Remarks, the Applicant argues that the prior art of record does not teach the verification step. Mahran does not explicitly teach verifying that the information extracted from the selected articles by the knowledge extraction personnel

is correct and that it has been placed in the correct format for storage in the knowledge representation, wherein the verification is performed by quality control personnel. Hinman does teach this limitation (column 12, lines 1-7, as communication to a second categorizer to review classification and paragraph 10, lines 35-40 as quality control personnel verifies information before data is stored) to improve uniformity and consistency of classification values. It would have been obvious to a person of ordinary skill in the art at the time the invention was made to modify Mahran with verifying that the information extracted from the selected articles by the knowledge extraction personnel is correct and that it has been placed in the correct format for storage in the knowledge representation, wherein the verification is performed by quality control personnel to improve uniformity and consistency of classification values as described by Hinman (column 12, lines 11-12). Furthermore, it is noted that the claim limitation fails to state that the "verification step that confirms that the extracted information is represented in an object and process relationship."

13. The rejections of the dependent claims are maintained for the reasons stated above.

Conclusion

14. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Contact Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to KIMBERLY LOVEL whose telephone number is (571)272-2750. The examiner can normally be reached on 8:00 - 4:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John Cottingham can be reached on (571) 272-7079. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/John R. Cottingham/
Supervisory Patent Examiner, Art Unit 2167

Kimberly Lovel
Examiner
Art Unit 2167

21 November 2008
kml